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XXXIV. *Account of the Effects of a Thunder-Storm, on the 15th of March 1773, upon the House of Lord Tylney at Naples. In a Letter from the Honourable Sir William Hamilton, Knight of the Bath, his Majesty's Envoy Extraordinary at the Court of Naples, and F. R. S. to Mathew Maty, M. D. Sec. R. S.*

Naples, March 20, 1773.

S I R,

Read June 17, 1773. **O**N Monday last, about half past ten at night, I had the satisfaction of being one, of many witnesses, to several curious phænomena, occasioned by the lightning having fallen on Lord Tylney's house, in this city. It was on his Lordship's assembly night; so that most of the nobility of this country, many of the foreign ministers, foreigners of distinction, particularly English, were present at the time of the explosion; to be sure there were not less than two hundred and fifty in the apartments, and, including servants, the whole number under Lord Tylney's roof could not be less than five hundred. The lightning passed through nine rooms, seven of which were crowded with

with parties at cards, or conversing ; it was visible in every one, notwithstanding the quantity of candles, and has left in all, evident marks of its passage. Many of the company were sensible of a smart stroke, like that of electricity, and some complained for several days after, of a pain they felt from that stroke, but no one received any essential hurt ; a servant, indeed, of the French ambassador's house has a black mark on his shoulder and thigh, from a stroke he received on the stair-case ; and another servant, who was asleep on the same stair-case, his head reclining against the wall, had the hair entirely singed from it on that side.

The confusion at the moment was, as you, Sir, may well imagine, very great : the report, which seems to have been equally heard in every room, was certainly as loud as that of a pistol ; and every one flying the room they were in, thinking the danger there, met of course in the door-ways, and stopped all passage. A Polish prince, who was playing at cards, hearing the report (as he thought of a pistol), and feeling himself struck, jumped up, and, clapping his hand to his sword, put himself in a posture of defence. I was sitting on a card-table, and conversing with Monsieur de Saussure, Professor of Natural History at Geneva ; we happened to be looking different ways, and each of us thought that the bright light and report was immediately opposite to us : and, upon enquiry, I found that every one was persuaded that the greatest explosion had been directly before him. I thought that an Indian cracker had been fired, and Monsieur de Saussure thought it the report of a pistol ; but hearing, amidst other

confused cries and noises, a voice saying, *Un fulmine, un fulmine!* we began to examine the gallery in which we were, and soon discovered that the gilding of the cornish had been affected, for in the corners, and at every junction, it was quite blackened; those that had been sitting under the cornishes were covered with the shining particles of the varnish that went over the gilding, and which was thrown off in small dust, at the moment of the explosion. There was a smell of sulphur in Lord Tylney's apartments, but not very considerable; I thought there was more in the apartment above, which Monsieur de Saussure and I visited immediately after, and where we found the same operation had been performed on the gildings. It is very certain that the profusion of gildings, which is remarkable in this house, and the bell-wires, prevented the lightning from making more use of the company to conduct it in its course. I will endeavour to give you as clear an account as I am able, of what I saw the next morning, with Monsieur de Saussure, when we examined together, most carefully, the whole of Lord Tylney's house; which you are at liberty to communicate to our respectable Society, if you think it worthy of its attention. There never was, I believe, an accident of the kind, that proved more clearly, the exact similitude of lightning and the electrical fluid, in all their operations.

The best apartments of this country have usually a broad cornish of lacker, or false gold, round their coved ceilings. Wood, covered with white plaister, a silvered leaf, and a yellow varnish, composes this magnificent cornish; a band of the same sort, but
much

much narrower, goes round the hangings, and down the corners, where it is double, which you will immediately comprehend, by casting your eye on the section of the gallery, marked A, of the inclosed drawing [see TAB. XIII]. The chairs, sofas, frames of pictures, tables, &c. are usually of the same sort of gilding, at least they were so here. By sending you the dimensions of each room of Lord Tylney's apartment, you will see on what a prodigious surface of gilding the lightning spread itself in its course; for you must add the same quantity of gilding in the apartments over Lord Tylney's, which are of the same dimensions, as richly decorated, and as much damaged; though we remarked that Lord Tylney's rooms that had suffered most, did not always correspond with those that suffered most in the upper apartments. Monsieur de Saussure and I began our examination on the flat roof of the house, composed of a kind of stucco, on which there was no sign of damage; neither was there on any of the chimneys. A tin gutter, with many spouts of the same metal, projecting about three feet, is immediately under this roof, and each of the spouts is supported by a small iron rod, or cramp, inserted in the wall underneath, and above by two wires of about the size of a goose-quill, and which likewise go into the wall. We observed a wire of this sort melted; and it seems highly probable, that the lightning found its way into the house at this place. We observed also, from the roof, that, though the house stands high, it is nevertheless commanded by many cupolas, and higher buildings; which, with other circumstances, makes it highly probable, that only a
 portion

portion of the lightning, the great explosion of which was heard all over Naples, had been conducted through our assembly. In the garrets under the astrico, or flat roof, we could perceive no signs of damage; under them, in the rich apartment immediately over Lord Tylney's, and consisting of the same number of rooms, the gilding of the cornishes, bands, chairs, sofas, &c. exhibited exactly the same appearance as in Lord Tylney's, which shall be particularly described presently. The account of the appearances at the moment of the explosion, given us by the few people that were in the apartments at the time, corresponded perfectly with what we had seen below.

Lord Tylney's apartment consists of five rooms on a line, and four others, going off at a right angle from the fourth room of that line. The lightning seems to have entered the first room of the five towards the north, and which is under that part of the gutter where we suspected it to have entered that part of the house. The five rooms of this line are of the same breadth, $23\frac{1}{2}$ feet, and the four others are $14\frac{1}{2}$ feet broad. The first room is $18\frac{1}{2}$ feet long. The gilt cornish of the whole apartment is in general $9\frac{1}{2}$ inches broad, and the gilt band that goes round the hangings $2\frac{3}{4}$ inches in breadth. The cornish of the room is only blackened at the joints, particularly the corners, and where there was any flaw or crack in the gilding. The small bands, which appear by their colours to have conducted the lightning down from the cornish in eight different parts of this room are (as in the other rooms) 14
feet

feet high, and these are what I shall call hereafter vertical descents, as marked in the drawing of the section of the room A. The gilding of a sofa in this room is likewise blackened. We found, that whenever a chair or sofa had been affected, it was owing to its having been, at the time of the explosion, in contact with the gilt band, and that the point of contact was continually marked by a black spot, both on the chair and band.

The second room, or gallery, in which Monsieur de Sauffure and I were at the time the lightning fell, is $33\frac{1}{2}$ feet long; the gilding of the cornish is much damaged, particularly on that side in contact with the bell wire. The lightning in this room had ten vertical descents, and passed over the gilding of two chairs, two sofas, and the frames of two marble tables, the white marble of which, at those parts which were in contact with the gilding, is tinged yellow, and such parts of the damask of the chairs and sofas as were in contact with the gilding, and had nails underneath, are singed. I found, upon enquiry, that most of those who were sitting upon these particular chairs and sofas were sensible of a smart stroke.

The third room, a section of which is marked A. in the drawing, is thirteen feet long, the cornish much damaged, a sofa and two chairs damaged; nine vertical descents in this room.

The fourth room is $14\frac{1}{2}$ feet long; the cornish is damaged, and the lightning had nine vertical descents in this room likewise, the bands being much damaged.

The fifth room is twelve feet two inches long; the cornish much hurt, particularly on the side in contact with the bell wire; there are no vertical bands in this room, therefore no apparent vertical descents of the lightning.

The sixth room, which is the angle to the fourth, is much hurt in the cornish; it is fourteen feet long, and has no gilt bands.

The seventh room nineteen feet $\frac{1}{2}$ long; no signs of damage on the gilding of the cornish, or in any other parts of the room, except the bell wire, which was melted, and seemed alone to have conducted the whole accumulated force of the lightning to the cornish of the next room.

Eighth room; a section of which is represented in the drawing under B. The cornish being overcharged, and the lightning, finding no complete vertical conductor, jumped from the picture frame over the door to the gilding of the door case, which gilding is six inches wide; and on one side where the gilding ended, it knocked out a piece of wood, which is likewise burnt, or rather singed. The track of the lightning is evidently marked on the white wall, as if by the flame of a candle, black and yellow; and the same sort of tinge is visible (as represented in the drawing) on each side of the gilding of the door. We remarked that the picture over the door was the only one in the room that was in contact, or near the cornish.

The ninth room is eighteen feet long; the cornish is hurt, and the lightning descended from it to a picture frame over the door, and from thence to another, which was the greatest jump that we remarked;
ed;

ed ; its passage is clearly worked on the wall, as is represented in the drawing C, and the distance from one picture frame to the other is thirteen inches. It went then to the other picture frame, and down to the gilding of the door case, which is surrounded in part, having made a hole in the wall, which however it did not pierce.

The lightning seems to have been much stronger in these two rooms than in any other ; and, as they were servants rooms, there were not above two or three people in them at the time of the explosion.

Underneath these apartments we found no traces of the explosion, except on the wall of the room directly under the door case of Lord Tylney's eighth room, where a piece of the plaistered wall of about six inches square was beat out, and scattered about the floor.

Under this room again was a wall in a damp wash-house, where most probably the lightning communicated with the earth, and dispersed itself.

Thus have I followed it through its course, and will take my leave of you ; but first I must tell you, that I have succeeded in discharging my battery of nine bottles over the cornices of two of my rooms, which represents in miniature exactly what we saw in such perfection at Lord Tylney's.

An excellent electrical machine that I had of Mr. Nairne is the wonder of this country ; as

they had never before seen electrical experiments in perfection.

I am,

S I R,

with great regard and esteem,

your most obedient

humble servant,

Wm. Hamilton.

Explanation of PLATE XIII.

A. Section of the third room. B. Section of the eighth room. C. Section of the ninth room. D. Bands by which the lightning descended vertically. E. The gilding affected most in the corners and marbled with black, where the lightning was most powerful. F. Bell-wire melted. G. Jump of the lightning traced on the white wall. H. Vertical descents of the lightning marked on the white walls; the greatest jump, from the first picture frame to the second, is 13 inches. I. Hole made in the wall by the lightning. K. Piece of wood beat out of its place and burnt. L. Sofa, the gilding blackened.

Received



